



Pharmaceutical & Bio Medical Waste Management Strategies

Pharmaceutical Waste Management Workshop
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Lansing, MI

Presented by

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PRACTICE
Greenhealth™

Not-for-profit membership-based organization committed to educate, motivate, and engage healthcare professionals to adopt best environmental practices that increase operational efficiency and support an environmentally sustainable system that improves the health of patients, staff and the community...



Practice Greenhealth Membership

- Nearly 1200 healthcare facility members
- More than 20 different health systems
- Business members including GPOs, suppliers, service providers
- Architecture, engineering, design and construction firms
- Clinics
- Individual practitioners



Healthcare's Environmental Footprint

- Healthcare is 16% GDP → 20% by 2015
- Hospital workforce: 4.6 million^[1]
- 24/7 operations
- \$8.3 billion on energy each year^[2]
- Water – often largest water users in the community
- **Over 5 million tons of waste per year**



11 Most Frequently Detected Compounds

- ***atenolol — Heart medicine***
- ***atrazine — Herbicide***
- ***carbamazepine — mood stabilizing drug***
- ***estrone — estrogen***
- ***gemfibrozil — lipid reducing drug***
- ***meprobamate — anxiety medicine***
- ***naproxen — Anti-inflammatory***
- ***phenytoin — antiepileptic***
- ***sulfamethoxazole - antibiotic***
- ***TCEP — Flame-retardant***
- ***•trimethoprim — antibiotic***

“The EPA is working with the National Academy of Sciences to advise on the potential risk to human health from low levels of pharmaceutical residues in drinking water.¹¹ EPA’s white paper reviewed six studies addressing the issue. Each of the articles presented approaches in which the results showed little to no risk from pharmaceuticals in drinking water.”

However...

First, Do No Harm



Patient Health



Worker Health

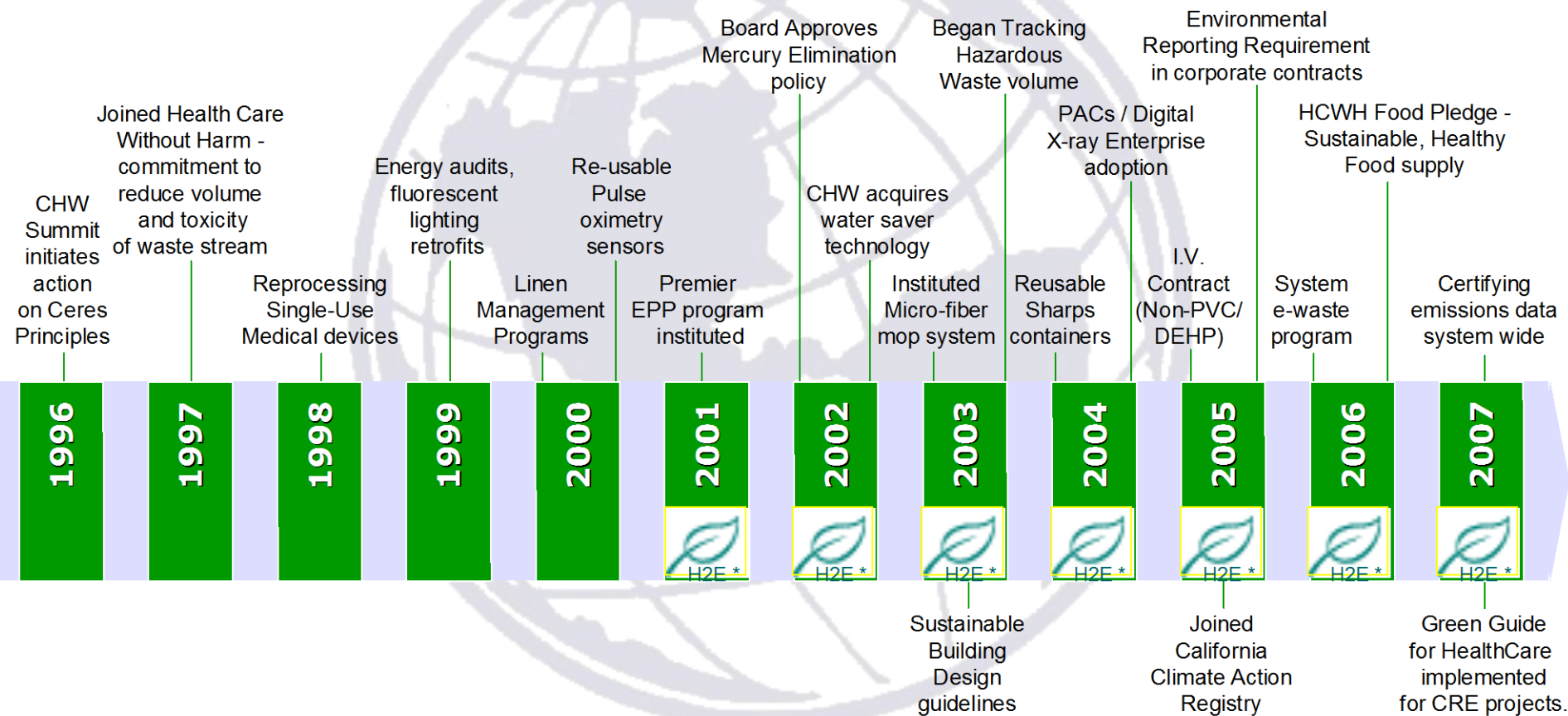


Community Health

CHW's Growing Environmental Actions

"Our Earth is talking to us...we must listen to it and decipher its message if we want to survive."

Pope Benedict XVI



Principles of Environmental and Recycling efforts



As a responsible and committed member of the city of Boulder and the state of Colorado, Boulder Community Hospital making its allegiance to protect and preserve the environment. Boulder Community Hospital will protect the environment by promoting cost-effective business practices consistent with the following principles:

- We meet or exceed all environmental laws and regulations.
- We support and encourage recycling of the materials used within the hospital.
- We minimize waste and ensure that contaminated waste is disposed of in a safe and responsible manner.
- We seek, evaluate and implement technologies that limit the use of non-renewable resources.
- We eliminate emissions of toxic or dangerous substances into air, water, or earth.
- We encourage the use of alternative transportation through financial and other incentives.
- We purchase products which contain recycled materials, are recyclable or reusable, and cause the least environmental harm during manufacturing, use, and disposal.
- We pursue conservation of water resources and energy efficiency.
- We actively participate with government, education, business, and the public to encourage environmental values and practices.
- We disclose to employees and public, insofar as we are operation that cause environmental harm or pose health or safety hazards and are taking any action against employees who report to management such adverse conditions.
- Realization of these principles will be achieved by full participation of each of our medical facilities and the sustained commitment of all our physicians and employees.

Adopted by the BCH Board of Directors, May 29, 2001

 **Boulder Community Hospital**



Healthy Environment • Healthy Community

STATEMENT of Environmental Principles

We, Sustainable Grand Hospital (SGH), affirm our commitment to promote healthier communities both locally and globally, and to be an environmental leader in all aspects of our building and operations in a manner demonstrating protection of environmental and human health.

SGH recognizes the critical link between human health and the health of the environment, and will seek new and innovative ways to improve environmental performance through conservation, purchasing, reduction, re-use and recycling programs, and through partnership with others in the community to safeguard the environment.

SGH will apply these principles to achieve optimal environmental standards consistent with our mission, including our commitments to clinical excellence, community health, and local responsibility.

In an effort to respect and protect the earth's resources, ensure environmental quality, and protect human health, SGH will:

- Insure environmental responsibility as a corporate value.
- Incorporate environmental considerations and conduct life-cycle analysis into building design, construction, and renovation programs.
- Minimize the generation of waste through source reduction, re-use, and recycling programs.
- Manage, minimize, and eliminate—where possible—the use of hazardous materials.
- Strive to purchase and utilize environmentally preferable products and services.

- Conserve energy/water and improve the overall energy efficiency of our operations. Make every effort to use and promote environmentally safe, cost-effective, and sustainable energy sources.
- Evaluate and minimize each aspect of our organization's impact on global climate change.
- Use renewable natural resources and conserve non-renewable natural resources through efficient use and cost-effective and careful planning.
- Employ prevention strategies to minimize negative environmental impacts to current situations.
- Ensure the health and safety of our employees by promoting safe work practices, reducing exposure to hazardous substances, and using the safest technologies and processes.
- Provide employees with safety and environmental information through training and education programs that enable and encourage them to make work practice decisions in support of these principles.
- Set annual goals and develop action plans to continuously improve the quality and sustainable outcomes of our environmental programs.
- Monitor, evaluate, and report on our practices in their relation to these environmental principles.



FOR MORE INFORMATION, CONTACT:



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UNIVERSITY OF MARYLAND MEDICAL CENTER SUSTAINABILITY PRINCIPLES

Recognizing that maintaining a healthy environment is essential to maintaining both personal and public health, the University of Maryland Medical Center commits to protect healthy patients and communities locally and globally by safeguarding the environment.

The University of Maryland Medical Center provides health care to the community in a safe and healthy manner and fulfills its obligation to protect and preserve the earth's resources by seeking innovative ways to conserve, reduce, reuse and recycle by its own actions and through partnerships with others.

Realization of these principles will be achieved by full participation and the sustained commitment of all our employees, medical staff and vendors.

- We will strive to meet or exceed all environmental laws and regulations.
- We support and encourage recycling of materials used within the hospital.
- We minimize waste and the use of hazardous materials. We ensure that waste is disposed of in a safe and responsible manner.
- We seek out and use renewable resources and pursue conservation of non-renewable resources through careful planning and cost-effective actions.
- We use pollution prevention strategies to reduce negative environmental impact.
- Where possible we purchase products which contain recycled materials and are recyclable or reusable.
- We will offer sustainable food options for our patients, family members, visitors, and employees.
- We will use financial resources and integrate sustainability metrics into our relationship with suppliers to improve their social and environmental performance.
- We will actively participate with government, education, business and the public to encourage environmental values and practices.



Recycle the health and safety of our employees



Act as an ethical and conscious citizen



Maximize the environmental impact of operations



Contribute to healthy communities locally and globally



Enhance the performance of supply chain partners

*Go Green.
Be Green.
Think Green.*

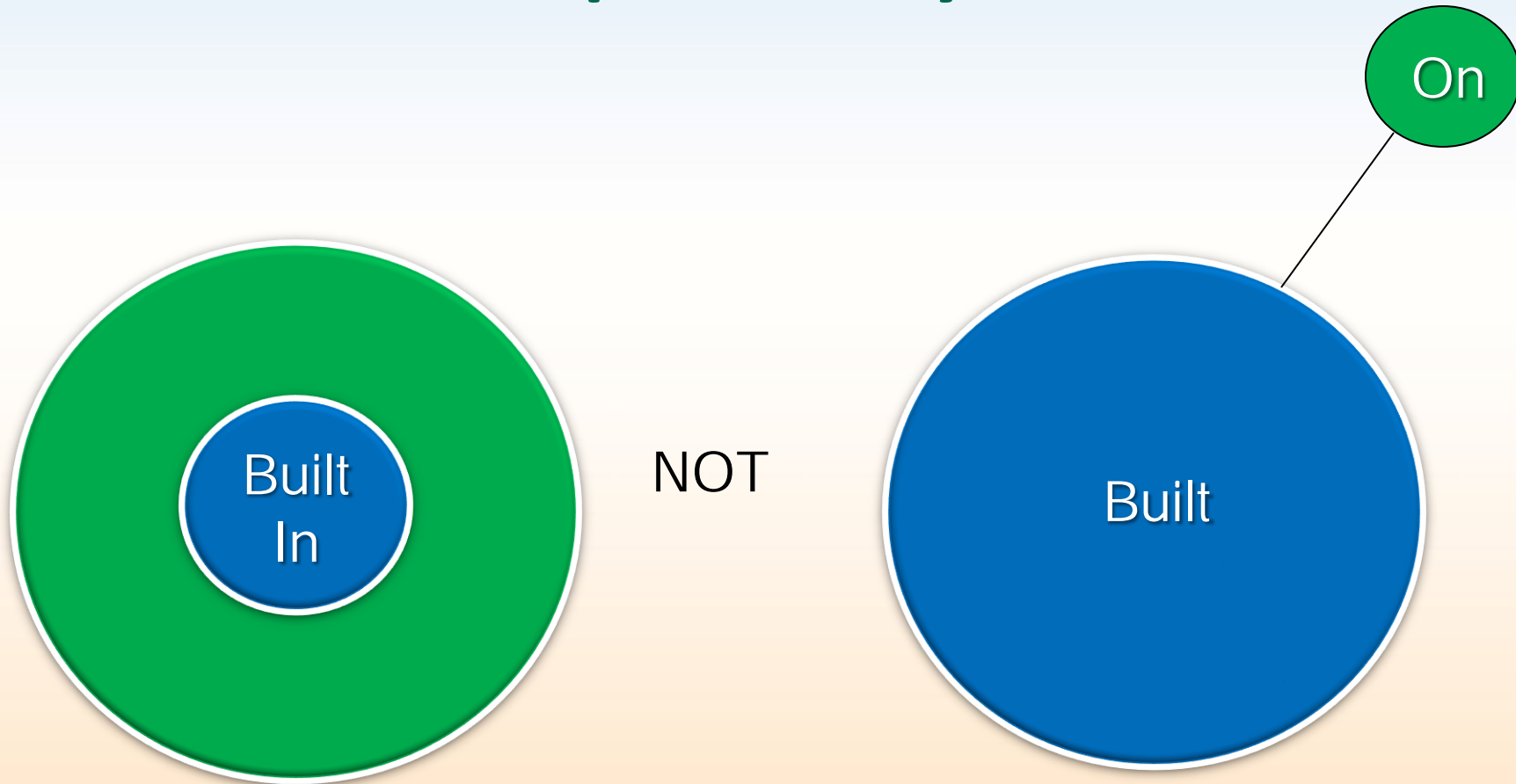


www.ummc.edu

Say it out loud.



A Culture of Responsibility



Sources of Pharmaceutical Contamination?

- Metabolic Byproducts
- Neighborhoods
- Pharmaceutical Manufacturers
- Healthcare Facilities
- Others: CAFOs & Landfills

Obtaining buy-in from leadership...

“A hospital pharmacy generally stocks between 2,000 and 4,000 different items, each of which must be evaluated against state and federal hazardous waste regulations.” — Protecting the Great Lakes from Pharmaceutical Pollution

Pharmaceutical Waste Progression

- Mgmt. of regulated hazardous pharmaceutical waste
- Mgmt of non-regulated hazardous pharm. waste applying BMPs
- Mgmt of non-regulated, “non-hazardous” pharm. waste applying BMPs
- Minimization of pharmaceutical waste

What is a regulation?

- The letter of the law...

-OR-

- The legal amount of hazardous waste I am allowed to expose to our community.

Increasing EPA Regulatory Fines

- North Shore University Hospital, Manhasset, NY fined \$40K
- Nassau University Medical Center, East Meadow, NY fined \$280K
- Mountainside Hospital, Montclair, NJ fined \$64K
- Memorial Sloan Kettering Cancer Center NY, NY fined \$214K

Relationship to Joint Commission Standards: Medication Management

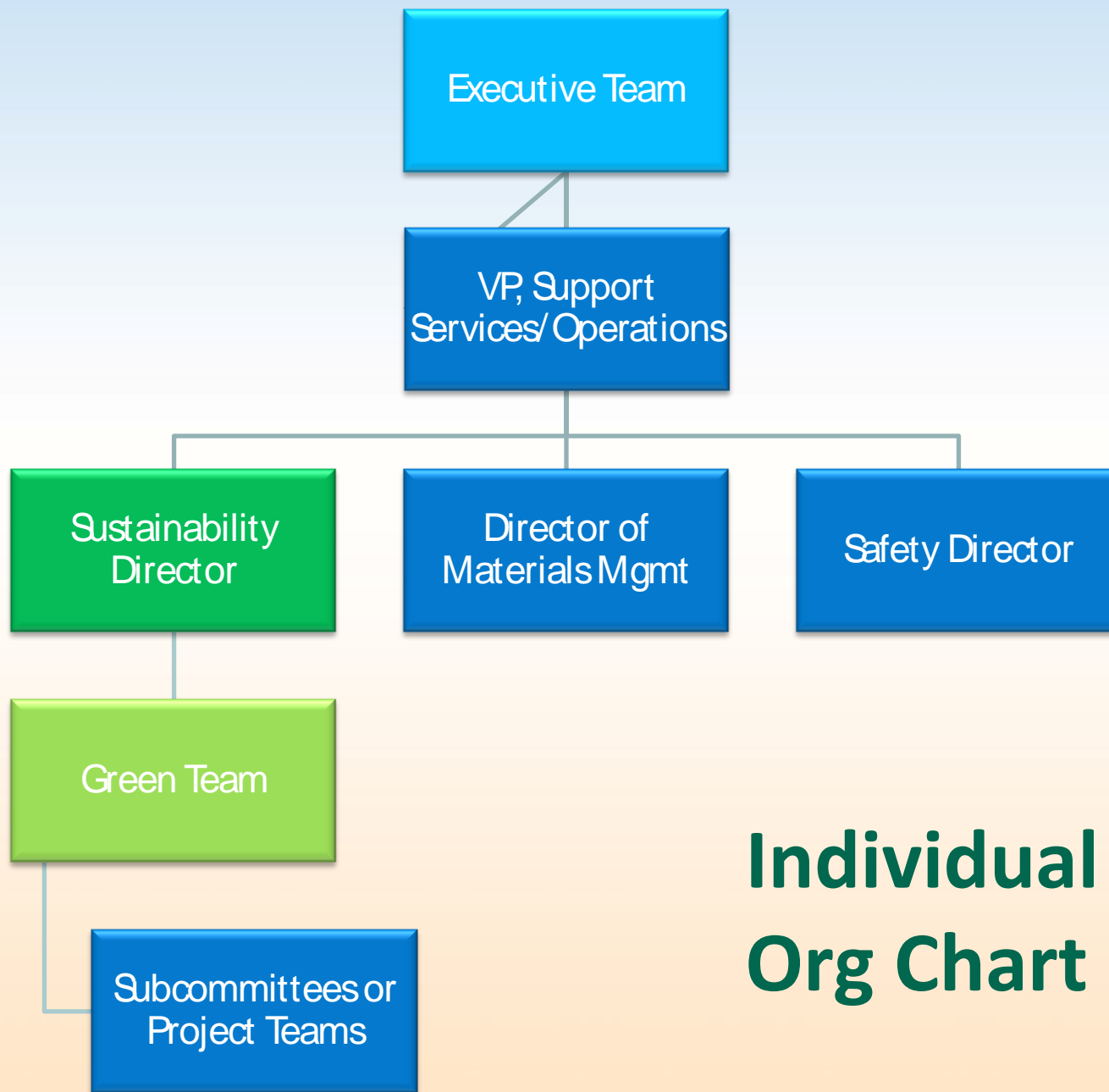
- Standard MM.4.80
 - *Medications returned to the pharmacy are appropriately managed.*

- Elements of Performance MM.4.80
 - *The organization has a process in place that addresses how outside sources, if any, are used for destruction of medications*

Joint Commission Continued

- Rationale for EC.3.10
- *Organizations must identify materials they use that need special handling and implement processes to minimize the risks of their unsafe use and improper disposal.*





Individual Facility Org Chart

Accelerators: Teamwork and Structure from the Start



Pharmaceutical Waste Management

- Formulary Review Committee
- Pharmaceutical Sub-Committee
 - Pharmacy Director
 - Clinicians....**Doctors & Nurses**
 - Pharmacy Technicians
 - Purchasing Director
 - Safety Officer
 - Sustainability Director
 - **Regulator**
 - Consultant

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Learn from our waste

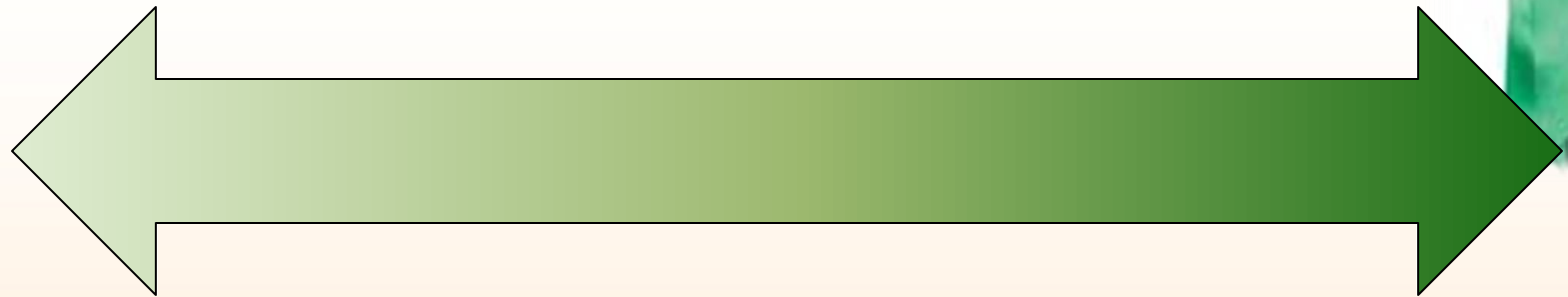
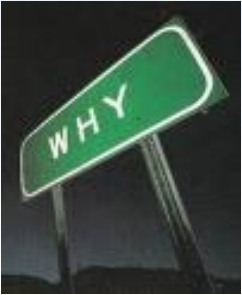




Where is the Waste Generated?

- Pharmacy
- Patient Care Units
- ER
- OR
- ICU/CCU/NICU
- Oncology/Hematology
- Long Term Care Facilities
- Home Health Care Services

Where is your institution?

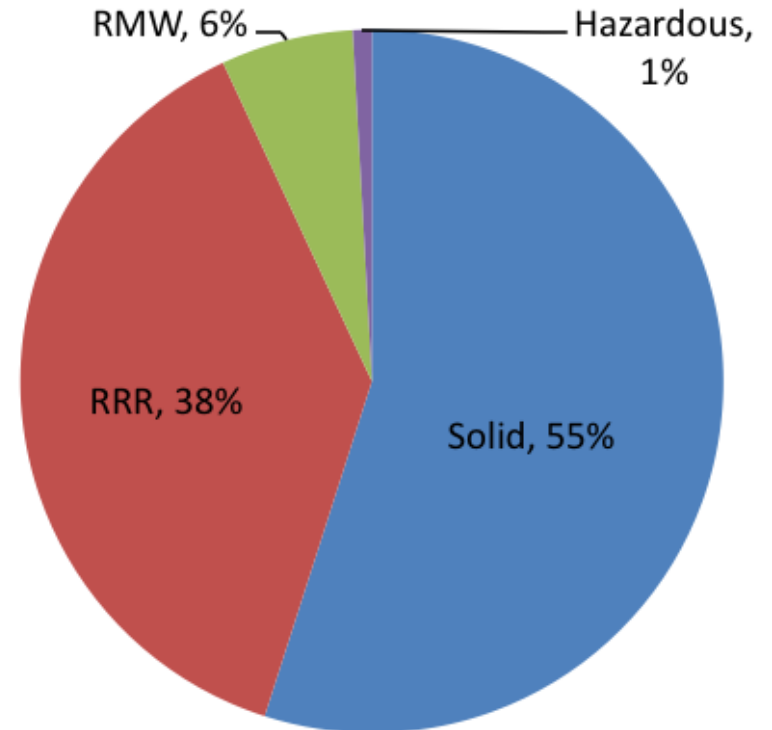
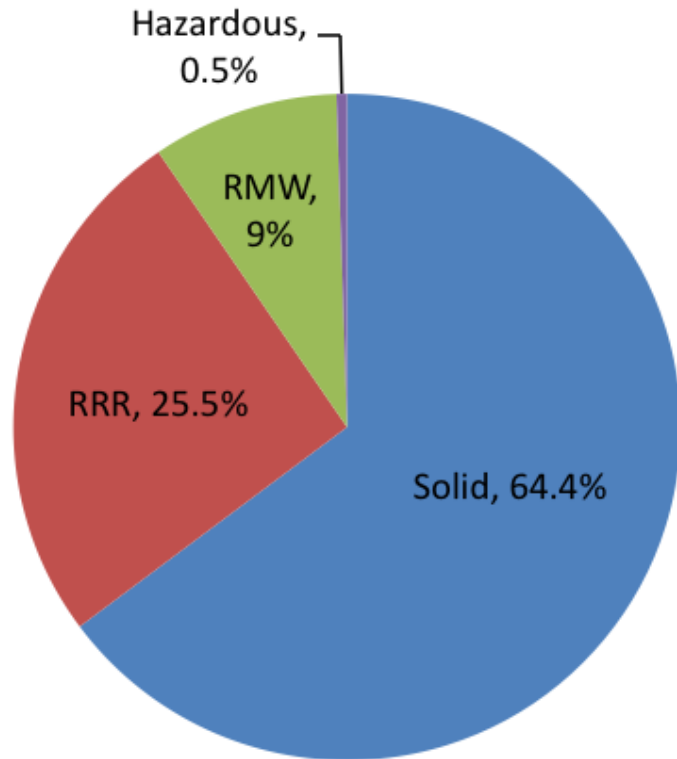


Just getting
Started.....

Committed
to Green



PFC & ELC



Waste Type	Average lbs. per APD for 2009 PFC Winners	Average lbs. per APD for 2010 PFC Winners	Average lbs. per APD for 2011 PFC Winners	Average lbs. per APD for 2010 ELC Winners	Average lbs. per APD for 2011 ELC
Hazardous Waste	0.14	0.14	0.19	0.13	0.20
RMW	1.9	1.9	2.6	1.6	1.5

Action items to consider?

- Vendor Selection/ Renewal
- Training
- Project Roll-Out
- Signage
- Continuing Education
- Reporting
- New Employee Orientation
- BMP Each Meeting

PATIENT CARE AREAS

LARGE BLUE CONTAINER

NON-RCRA HAZARDOUS



Y BAGS WHICH CONTAIN
THAN 3% PHARMACEUTICAL
ARE NOT LISTED UNDER
HAZARDOUS (CONTAIN FLUIDS
NG OFF TUBING OR PLACING
STIC BAG)

EMAINING UNUSED,
ACEUTICAL WASTE NOT
AS HAZARDOUS

R & SALT SOLUTIONS CAN BE
ED DOWN THE DRAIN

PTY I.V. BAGS

SMALL BLUE CONTAINER



SMPOULES, PILLS, OR SHARPS
H CONTAIN MORE THAN 3%

ACEUTICALS THAT ARE NOT
UNDER RCRA HAZARDOUS
E

BLACK CONTAINER

RCRA HAZARDOUS



All Pharmaceuticals listed below.
IF YOU DON'T SEE IT LISTED BELOW BUT
THINK IT MAY BE HAZARDOUS, PLEASE
CONSULT THE NDC MASTER LIST.

NO SHARPS!

CHECK OFF LIST ATTACHED TO CONTAINER

ALUPENT MDI INH
AMMONIA AROMATIC INH
ATROVENT HFA INH
CHLORASEPTIC COOL MINT LIQ
CLINDAMYCIN PHOS
CLOBETASOL CRE
CLOBETASOL SOL
COMBIVENT INH
COUMADIN INJ
COUMADIN TAB - ALL MG + WRAPPER
FLOVENT INH
FLOVENT HFA INH - ALL MCG
GOT2B SEXY V/VL SPY - ALL OZ
HUMULIN INJ - ALL ML
HURRICAIN SPR
ISOPROPYL ALCOHOL LIQ
LANTUS INJ
NEO/POLY/GRA SOL OP
NEOMYCIN/POLYMYCIN/HC SOL OT
NEOMYCIN/POLYMYCIN/HC SOL OP
NICORELIEF PCS - ALL MG + WRAPPER
NICOTINE TDS - ALL MG + WRAPPER
NOVOLIN 70/30 INJ
NOVOLIN N INJ
NOVOLIN R INJ
NOVOLOG MIX 70/30 INJ
NOVOLOG INJ
ALL VITAMIN TABLETS
XOPENEX INH

PURPLE CONTAINER

DUAL WASTE



All RCRA Hazardous with contaminated
sharp/needle with residual volume.

SHARPS OK!

REFER TO PHARMACEUTICALS
UNDER BLACK CONTAINER LIST

GRAY CONTAINER

REGULAR WASTE



EMPTY I.V. BAGS & TUBING
EMPTY MEDICATION VIALS
TRASH/WRAPPERS
DRESSINGS
CHUX
DIAPERS
GLOVES
EMPTY FOLEY BAGS & OTHER
DRAINAGE BAGS
DISPOSABLE PATIENT ITEMS
SANITARY NAPKINS
SUGAR & SALT SOLUTIONS CAN BE
POURED DOWN THE DRAIN

RED CONTAINER

EMPTY SHARPS



All Empty Sharps!

EMPTY SHARPS ONLY!

EMPTY VIALS OR AMPOULES
ACCEPTED PER HOSPITAL POLICY
REGARDING RECYCLING
NEEDLES
BROKEN GLASS VIALS
BROKEN AMPOULES
BLADES
SCALPALS
RAZORS
PINS
CLIPS
STAPLES
ALL EMPTY SYRINGES (TUBEXES,
CARPLUJECTS, OR THOSE WITH
TRACE (UNPOURABLE) AMOUNT
OF MEDICATION
TROCARS
INTRODUCERS
GUIDE WIRES
SHARPS FROM PROCEDURES,
SPECIMEN DEVICES IN ENDOSCOPY,
ED, RADIOLOGY, OR, ETC.

RED BAG CONTAINER

BIOHAZARDOUS



BLOOD AND OTHER POTENTIALLY
INFECTIOUS MATERIAL (OPIM)
BLOOD TUBING, BAGS, HEMOVACS,
PLEUROVACS
SOAKED, DRIPPING, BLOODY
DRESSINGS
INTACT GLASS OR PLASTIC BOTTLES/
CONTAINERS WITH BLOODY FLUID
OR OPIM
SUCTION LINERS WITH
BLOODY OR OPIM
ALL DISPOSABLE ITEMS SOAKED OR
DRIPPING WITH BLOOD OR OTHER
POTENTIALLY INFECTIOUS MATERIAL
(OPIM)

RADIOACTIVE WASTE

Contact Radiation Safety Officer at
extension 6609 (or call hospital operator
for on-call) for disposal of all radioactive
waste.

YELLOW CONTAINER

CHEMO WASTE



TRACE CHEMO: ALL SUPPLIES
TO MAKE & ADMINISTER CHEM
MEDICATION:

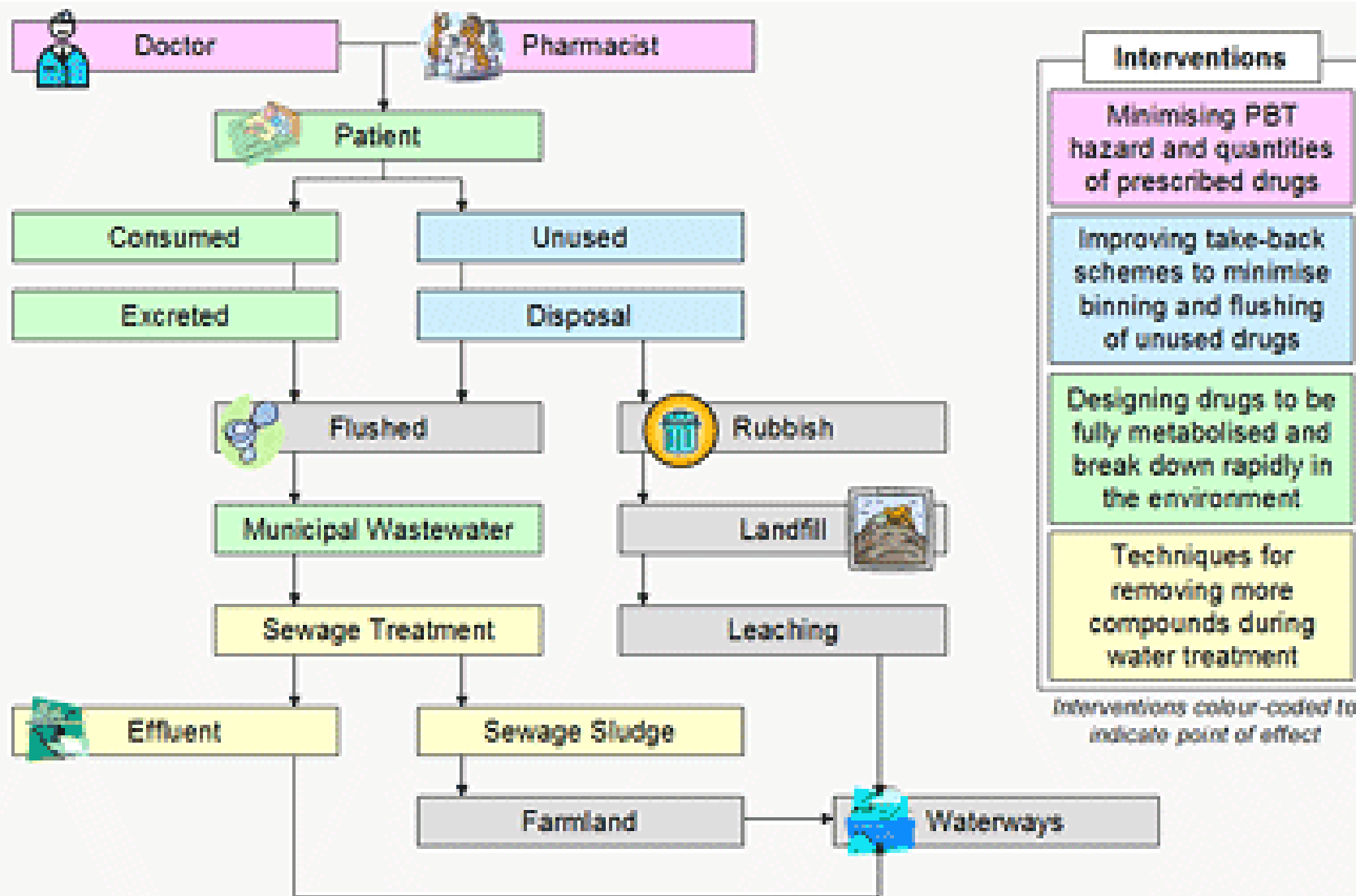
TUBING
EMPTY BAGS
BOTTLES
VIALS
SYRINGES
GLOVES
PADS
MASKS
GOWNS
WIPES
ETC.

ALL CHEMO SPILLS ARE TO BE
PLACED IN YELLOW CHEMO
CONTAINERS FOR DISPOSAL B
HAZ MAT

RETURN ALL UNUSED BULK
(POURABLE) CHEMO TO PHAR
IN ORIGINAL PHARMACY BAG
CREDIT OR DISPOSAL

Process	2009 PFC Winners	2010 PFC Winners	2011 PFC Winners	2010 ELC Winners	2011 ELC Winners
Have implemented a pharmaceutical waste management program	65%	79%	91%	96%	91%
...of these, hired an outside vendor to help set up your program	77%	67%	58 % internal <u>analysis</u> 58% <u>waste</u> <u>vendor</u> 31% other outside vendor	65%	65% internal <u>analysis</u> 61% <u>waste</u> <u>vendor</u> 39% other outside vendor
separate pharmaceutical waste at the point of generation	—	66%	84%	67%	83%

Process	2009 PFC Winners	2010 PFC Winners	2011 PFC Winners	2010 ELC Winners	2011 ELC Winners
send pharmaceutic al waste back to pharmacy for proper segregation	—	29%	36%	42%	45%
collect all pharmaceutic al waste at the waste collection point and sort in a satellite accumulation area	—	29%	29%	21%	26%
treat all pharmaceutic als as hazardous waste	—	30%	29%	38%	30%



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THANK YOU! QUESTIONS?